

Reply to Office Action dated December 10, 2008

REMARKS

Claims 1, 2 and 5-26 are pending in this application. By this Amendment, the specification and claims 1, 16 and 24 are amended. Various amendments are made for clarity and are unrelated to issues of patentability.

Applicant gratefully acknowledges the Office Action's indication that claims 5, 6 and 26 contain allowable subject matter. However, as will be discussed below, all claims are believed to be allowed.

The Office Action objects to the specification because of informalities. As suggested in the Office Action, the specification is amended to include features recited in original claims, such as original claims 13-15, 18-20 and 23. Withdrawal of the objection is respectfully requested.

The Office Action rejects claims 1, 2 and 5-26 under 35 U.S.C. §101. Applicant respectfully submit that the pending claims satisfy 35 U.S.C. §101. That is, the claims relate to transformation of data, transmission of the transformed data to a plurality of terminals, reception of the transmitted data and performing decoding of the transmitted data at one of a plurality of terminals. These operations are therefore tied to a particular apparatus and/or transform the underlying subject matter. The claims therefore satisfy 35 U.S.C. §101. Withdrawal of the rejection is respectfully requested.

The Office Action rejects claims 1, 2 and 3-23 under 35 U.S.C. §112, first paragraph. By this Amendment, independent claims 1 and 16 are amended as suggested in the Office Action to remove "specific." It is respectfully submitted that the pending claims satisfy 35 U.S.C. §112, first paragraph. Withdrawal of the rejection is respectfully requested.

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The Office Action rejects claims 1 and 7-25 under 35 U.S.C. §103(a) over U.S. Patent 5,319,707 to Wasilewski et al. (hereafter Wasilewski) in view of U.S. Patent 5,128,665 to Deluca et al. (hereafter Deluca) and newly-cited U.S. Patent 6,228,806 to Touma et al. (hereafter Touma). The rejection is respectfully traversed with respect to the pending claims.

Independent claim 1 recites processing a present data frame to be transmitted, the present data frame comprising: a header subframe containing frame mapping information of data to be transmitted to a plurality of terminals, and data subframes containing data multiplexed therein, and to be transmitted to the plurality of terminals at a present time in correspondence to frame mapping information transmitted in a frame in advance of the header subframe of the present frame. Independent claim 1 also recites that the frame mapping information transmitted in the frame in advance of the header subframe of the present frame includes a header subframe having subframe numbers arranged in an order to correspond to positions of the corresponding multiplexed subframes in the present frame and the frame in advance additionally includes data subframes following the header subframe. Independent claim 1 also recites the frame mapping information transmitted in the frame in advance of the present frame includes the subframe numbers transmitted 'n' frames before the present frame in succession, and the multiplexed data subframes are positioned in the present frame according to an order of transmission of the subframe numbers that is transmitted in the frame in advance of the present frame. Independent claim 1 further recites transmitting the present data frame to at least one of the plurality of terminals, and performing decoding of the present frame at the one of the plurality of terminals.

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The applied references do not teach or suggest at least these features of independent claim 1. More specifically, the Office Action (on page 4) states that Wasilewski and Deluca do not disclose “transmitting the subframes in advance of the header subframe.” However, the missing features include more than the features discussed in the Office Action. Applicant respectfully submits that Wasilewski and Deluca do not teach or suggest other “transmitted in advance” features, which are not specifically addressed with respect to the applied references. Wasilewski and Deluca do not teach or suggest frame mapping information transmitted in a frame in advance of the header subframe of the present frame, as recited in independent claim 1. Further, Wasilewski and Deluca do not teach or suggest subframe numbers transmitted ‘n’ frames before the present frame in succession, as recited in independent claim 1. Wasilewski and Deluca also do not teach or suggest the multiplexed data subframes are positioned in the present frame according to an order of transmission of the subframe numbers that is transmitted in the frame in advance of the present frame.

Touma does not teach or suggest the missing features of independent claim 1. The Office Action cites Touma’s FIGs. 4-5 and col. 11, line 30-col. 12, line 33. However, Touma merely discloses that different subscriber information transmission subframes 31 may be provided in an upstream frame 30 (to be transmitted to station apparatus 100, and that different subscriber information transmission subframes 41 may be provided in a downstream frame 40 (and transmitted to the optical network units (ONU) 1 to n). See col. 11, lines 18-50. Touma relates to information within a same frame. Accordingly, Touma does not teach or suggest frame mapping information in a frame that is in advance of the present frame. Touma also does not teach or

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suggest subframe numbers transmitted 'n' frames before the present frame. Touma does not teach or suggest the specifically claimed features relating to a frame in advance of the present frame. The subframes discussed in Touma relate to a single frame. Thus, Touma does not teach or suggest the missing features of independent claim 1.

For at least these reasons, Wasilewski, Deluca and Touma do not teach or suggest all the features of independent claim 1. Thus, independent claim 1 defines patentable subject matter.

Independent claim 16 recites (a) processing data to be transmitted at a present time into a present frame having subframes, (b) multiplexing the formed subframes of the present frame according to subframe mapping information that is transmitted to a plurality of terminals in a frame in advance of the present frame, wherein the frame in advance of the present frame includes a header subframe having the subframe numbers corresponding to the subframe mapping information, and a plurality of subframes that follow the header subframe of the frame in advance. Independent claim 16 also recites (c) transmitting, to the plurality of terminals, the multiplexed subframes of the present frame together with subframe mapping information of the subframes to be transmitted after transmitting the present frame, wherein the subframe mapping information includes subframe numbers in an order to correspond to positions of formed subframes to be transmitted after the present frame in a subsequent frame. Still further, independent claim 16 also recites performing decoding of the present frame at one of the plurality of terminals.

For at least similar reasons as set forth above, Wasilewski, Deluca and Touma do not teach or suggest at least these features of independent claim 16. More specifically, Wasilewski,

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Deluca and Touma do not teach or suggest subframe mapping information that is transmitted to a plurality of terminals in a frame in advance of the present frame. Wasilewski, Deluca and Touma also do not teach or suggest that the subframe mapping information includes subframe numbers in an order to correspond to positions of formed subframes to be transmitted after the present frame in a subsequent frame, wherein the frame in advance of the present frame includes a header subframe having subframe numbers corresponding to the subframe mapping information, and a plurality of subframes that follow the header subframe of the frame in advance. Thus, independent claim 16 defines patentable subject matter.

Independent claim 24 recites transmitting a previous frame to a plurality of terminals and processing data to be transmitted in a present frame that follows the previous frame. Independent claim 24 also recites that the data includes: a header subframe containing a plurality of subframe numbers relating to data for a plurality of terminals, and a plurality of data subframes each containing data to be transmitted to the plurality of terminals. Independent claim 24 also recites that an order of the plurality of data subframes in the present frame identifies an order of subframe numbers that is transmitted in a previous frame prior to transmission of the present frame, wherein the previous frame include a header subframe having the subframe numbers, and a plurality of subframes that follow the header subframe of the previous frame. Independent claim 24 further recites transmitting the data of the present frame to at least one of the plurality of terminals performing decoding of the present frame at the one of the plurality of terminals based on the previously-received previous frame

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For at least similar reasons as set forth above, Wasilewski, Deluca and Touma do not teach or suggest at least these features of independent claim 24. More specifically, Wasilewski, Deluca and Touma do not teach or suggest transmitting a previous frame to a plurality of terminals and subframe numbers that is transmitted in the previous frame. Wasilewski, Deluca and Touma also do not teach or suggest that an order of the plurality of data subframes in the present frame identifies an order of subframe numbers that is transmitted in a previous frame prior to transmission of the present frame, wherein the previous frame include a header subframe having the subframe numbers, and a plurality of subframes that follow the header subframe of the previous frame. Thus, independent claim 24 defines patentable subject matter.

For at least the reasons set forth above, each of independent claims 1, 16 and 24 defines patentable subject matter. Each of the dependent claims depends from one of the independent claims and therefore defines patentable subject matter at least for this reason. In addition, the dependent claims recite features that further and independently distinguish over the applied references.

For example, dependent claim 10 recites that the data subframes are multiplexed in the present frame according to priorities of the terminals. See also dependent claim 20. The Office Action merely cites Wasilewski's FIGs. 1 and 2. However, Wasilewski has no teaching or suggestion for multiplexing data subframes according to priorities of terminals. The other applied references do not teach or suggest these features. Thus, dependent claims 10 and 20 define patentable subject matter at least for this additional reason.

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CONCLUSION

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance of claims 1, 2 and 5-26 are earnestly solicited. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
KED & ASSOCIATES, LLP



David C. Oren
Registration No. 38,694

P.O. Box 221200
Chantilly, Virginia 20153-1200
(703) 766-3777 DCO/kah

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Please direct all correspondence to Customer Number 34610